

Technology

# DNA Test Service Exposed Thousands of Client Records Online

- Vitagene left client information accessible on public servers
- Data online included emails, DOBs, potential health issues

A Genealogist Can Identify You From Your DNA in Just a Few Hours



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By Nico Grant

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DNA-testing service Vitagene Inc. left thousands of client health reports exposed online for years, the kind of incident that privacy advocates have warned about as gene testing has become increasingly popular.

More than 3,000 user files remained accessible to the public on Amazon Web Services cloud-computer servers until July 1, when Vitagene was notified of the issue and shut down external access to the sensitive personal information, according to documents obtained by Bloomberg. The genealogy reports included customers' full names alongside dates of birth and gene-based health information, such as their likelihood of developing certain medical conditions, a review of the documents showed.

Vitagene said that the files dated from when the company was in “beta” testing and represented a small fraction of its customer base.

“We immediately opened an investigation and blocked access to the files,” Chief Executive Officer Mehdi Maghsoodnia said in an email. “We updated our security protocols in 2018 and have engaged an outside security firm to run external and internal penetration testing across our application. As a team we acknowledge our mistake and will keep ourselves accountable. We hope over time to prove that we are worthy of the trust that is given to us every day.”

## Welcome to your Vitagene Health Playbook

Dear [REDACTED],

Welcome to your Vitagene Playbook, the ultimate source for understanding your DNA and its relationship to your health, nutrition and overall wellbeing.

Throughout this report you will find recommendations on your diet, nutritional needs, exercise and goals, all based on your unique genetic makeup and created solely for you. Based on extensive scientific research and backed by leaders in the healthcare industry, your Vitagene Playbook will help you discover, improve and protect your health in ways that are actionable and easy to implement in your lifestyle.

We are excited that you've taken the steps to ensuring a path to great health, and we're confident this report and its cache of resources will be of great benefit to you.

Be well,

The Vitagene Team

[REDACTED]  
DOB: [REDACTED]  
Division: [REDACTED]  
Physician: [REDACTED]  
Created on: January 25th, 2016

### DISCLAIMER

It is not the intention of Vitagene to provide specific medical advice but rather to provide you with information to better understand the health risks and benefits associated with your genotype. Specific medical advice will not be provided, and Vitagene urges you to consult with a qualified physician for diagnosis and for answers to your personal questions.

The information supplied to you does not confirm or replace any medical diagnosis or status conferred by a health care professional. The information provided to you is not a genetic diagnosis of disease, nor does it identify an existing medical condition. Individuals with specific concerns about their health status or genetic testing should consult with a doctor or a genetic counselor.

The information provided by Vitagene is neither comprehensive nor absolute, and may not be applicable to individual circumstances should the information be subsequently deemed inaccurate or out of date by virtue of new scientific advances. Once your report is provided to you, there will be no further information, feedback, or updates provided to you unless you conclude a separate arrangement for an update regarding new developments.

Your report constitutes the full extent of information to be provided to you under this agreement.

Vitagene makes no warranties or representations, either express or implied, that this service will meet your requirements or expectations. No advice or information, whether oral or written, obtained through or from the provision of these services, will itself create any warranty or representation or other obligation. It has not been cleared or approved by the U.S. Food and Drug Administration.



## [REDACTED]'s Playbook Summary

DISCOVER	IMPROVE	PROTECT	
<b>Obesity</b> You have an increased risk of obesity	Monitor daily calorie intake to avoid over consumption of calories	Ensure energy expenditure and energy consumption are balanced	p.12
<b>Safety</b> You have a reduced ability to feel full after meals	Eat slower and consume more water-rich foods such as salads and soup to improve satiety	Monitor what you consume to avoid overeating	p.13
<b>Carbohydrate Metabolism</b> You process carbohydrates normally	When consuming carbohydrates, prefer more nutrient dense sources	Choose fiber-rich carbohydrate sources such as vegetables, fruits, legumes and whole grains	p.14
<b>LDL Cholesterol</b> You are at an average risk for having high LDL levels	Maintain normal saturated fat in diet and be wary that excess can lead to high LDL	Monitor LDL levels to ensure levels are in normal range	p.15
<b>Triglyceride Levels</b> You are at risk for having high triglycerides	Lower overall carbohydrate intake	Eating omega-3 rich foods and exercising are also very beneficial to lowering triglyceride levels	p.15
<b>Micro-nutrients: Vitamins, Minerals, Antioxidants</b> p.21-23			
<ul style="list-style-type: none"><li>Vitamin B6: You are likely to be deficient in B6, eat more foods rich in B6 such as sunflower seeds, pistachios, tuna, turkey, bananas or avocados if levels are low</li><li>Vitamin B12: You are likely to have higher levels of B12, although it is not likely to consume too much vitamin B12 from foods, beware of taking supplements of isolated B12, as it can result in an imbalance of the other B vitamins</li></ul>			



Two pages from a Vitagene user's DNA-test report

Since 2014, closely held Vitagene has helped people craft diet and exercise plans that are molded to their biological traits, lifestyles and goals. The San Francisco-based company generates individualized reports of as many as 60 pages within four- to six-weeks of receiving DNA samples, then walks customers through health-risk factors and recommendations. Vitagene was co-founded by a doctor and a sales executive and says it intends to bring a genetic-based approach to wellness.

Advocates say consumers may not understand the data privacy policies of at-home genealogy services. For example, 23andMe Inc. shares anonymized information from its clients with one of its investors, drugmaker GlaxoSmithKline Plc, to help develop new treatments and select patients for clinical trials. The testing company said customers must opt in to each step of the process. Law enforcement

agencies have begun tapping DNA companies' large databases to track down criminals, leading to last year's capture of the Golden State Killer decades after the crimes. Companies also share DNA data to make a profit.

None of those issues has slowed demand for direct-to-consumer genetic-testing kits. The market is expected to reach \$2.5 billion of sales a year by 2024, according to Global Market Insights Inc.

Vitagene customer records were created from 2015 to 2017. Some of the documents included clients' contact information, such as some work email addresses, making it easier to confirm people's identities.

The exposure was "extremely significant," said James Hazel, a postdoctoral fellow at Vanderbilt University's Center for Genetic Privacy and Identity in Community Settings.



"Past breaches have not involved genetic data or test reports," Hazel said. "This is the first time I've heard that genetic data is implicated, which raises a host of privacy issues for the individuals." Hazel, who has studied the privacy policies of at-home genealogy companies, said this was the type of information malicious actors could have used to try to blackmail individuals or sell to others.

Still, for consumers, there can be little recourse in these kinds of data exposures. Companies that make DNA home-testing kits are exempt from U.S. regulations that safeguard patients' medical records.

Vitagene openly stored 4,186 files within one collection on an AWS server, which included thousands of reports on clients. The company left 1,401 user files in a less-secure setting that can typically be accessed by a larger group of its employees than those authorized to view the information.

Vitagene emphasized that no credit card data, passwords or other sensitive financial information was exposed. The U.S. Federal Trade Commission in 2014 ruled that DNA testing company GeneLink Inc. must implement new security procedures after alleging the company didn't safeguard customers' social security and credit card numbers, amid a broader review of the company's practices.

Vitagene had promised customers that it would protect their identities.

“Your results and DNA sample are stored without your name or any other common identifying information,” the company says on its website. “We believe that genetic information deserves the highest level of security. Therefore, your privacy is a top priority at Vitagene.”

Vitagene hasn’t yet notified clients about the exposure incident. Customer Julie Chaiken said she first heard that her data was left unsecured when Bloomberg contacted her.

“I hope the company is going to reach out to me and let me know how extensive this breach is and how many people have looked at these files,” Chaiken said in an interview. “I hope they get their act together and respect people’s information just like any health-care provider or financial services company we expose our data to.”

Vitagene said it would notify affected customers after sifting through all of the leaked files.

There were almost 300 files that contained people’s raw genotype DNA data in massive blocks of code accessible to public viewing, but understood only by someone familiar with the science of human genomes. Almost a third of that data was exposed with the user’s first name.

Read about the new ways DNA is being shared and used

Hazel said the presence of that data was very concerning.

“Even if raw data is not attached to a name or other personally identifiable information, there’s always a risk with genetic data that a person can be re-identified with that alone,” he said. Many websites allow people to upload genetic data to find relatives, he said.

– *With assistance by Josh Eidelson*

*(Updates with context on 23andMe program in the sixth paragraph.)*